Chapter 17
Academic–Industry Collaboration:
Patterns and Outcomes

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ABSTRACT

The collaborative networks between university, industry, and government are key sources of innovation, entrepreneurship, and regional economic development. Specifically, studies have focused on how to transfer university expertise to commercially applicable innovation through academic and industry networking. This chapter provides new insight into university and industry collaboration practices from a case study of the Buffalo Niagara Medical Campus (BNMC) and the University at Buffalo-State University of New York in the U.S. The sample of scientists surveyed shows that collaboration is actively pursued by scientists at the consortium. The collaborative networks of scientists, access to federal funding, and infrastructural support through institutional coordination locally contribute to innovative translational research. Joint research, contract research, and consulting agreement are major forms of university-industry collaborative practices. In addition, the collaboration with industry correlates with scientists' academic productivity as well as entrepreneurial outcomes.

INTRODUCTION[1]

Universities are centers of innovation that stimulate regional economic development through knowledge generation and dissemination. The expectation is that major research universities will contribute to fostering local high tech clusters; weak connections with local/regional industrial clusters or weak performance in terms of technology transfer locally or otherwise raise doubts

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among certain groups of government officials and taxpayers about the role of the university in economic development. Lawton Smith and Bagchi-Sen (2012) argued that the regional impact of universities depends on (1) the internal characteristics of the university; (2) university-level response to exogenous shocks (Feldman & Francis, 2006); (3) public funding decisions for higher education institutions; and (4) the characteristics of the regional economy (e.g., skilled labor supply, local clusters of innovative firms). Similarly, Casper (2013) argues that a university's success in research, translational research, and entrepreneurial activities depends on various internal and external factors. Understanding the role of life sciences in innovation and entrepreneurship is critical to universities in addition to contextual characteristics such as their location; universities are fixed in their location, which often dictates the development paths. Universities face major risks depending on their location (e.g., government support, scientific labor supply, innovation absorptive capacities) including the effect of the broader external environment such as demographics, which can affect their revenue streams (e.g., declining population leading to declining revenue, declining government support) (Lawton Smith & Bagchi-Sen, 2012). One major revenue stream for basic and translational research is the support from the national government (see Woolf 2008). How such governmental support in life sciences translates into innovation has been a major focus of research in the post-Bayh-Dole era in the United States.

With the rising importance of multidisciplinary approach to problem solving, collaboration, both in-house and with external partners, is a key to success in the life sciences (Bagchi-Sen, 2004, 2007). The transdisciplinary nature of academic and industry collaboration networks enables science to be more innovative and entrepreneurial in nature. Furthermore, individual researcher characteristics, organizational capabilities, and local/regional factors go hand in hand in directly and indirectly influencing outcomes of collaborative research (Bagchi-Sen, Hall, & Petryshyn, 2001; Bagchi-Sen & Lawton Smith, 2012; Lawton Smith & Bagchi-Sen, 2006). In conjunction with specific local factors, the triple helix interactions between university, government and industry signify the synergistic outcomes of transdisciplinary collaboration in the regional context of innovation, entrepreneurship and competitiveness. The well-performing triple helix policies are particularly important to establish the dynamics of regional innovativeness through spillover effects. Specifically, spillovers from university-industry collaboration are expected to facilitate translating university expertise into local techno-economic development.

The purpose of this chapter is to address the following research questions: 1) What is the pattern of collaboration between academic researchers and industry partners? 2) What are the outcomes of academic and industry collaboration? 3) What role has the university-industry collaborative networks played in innovation and entrepreneurship? A specific goal, therefore, is to understand the patterns, facilitators/barriers, and outcomes of academic and industry collaboration among researchers in a medical campus, which is located in a mid-size city with a rich knowledge base but shrinking population.

STUDY CONTEXT

This study is based on a survey of researchers and clinicians at the Buffalo Niagara Medical Campus (BNMC http://www.bnmc.org/) located in downtown Buffalo. BNMC is a unique consortium that incorporates and promotes biomedical research, higher education and training, and clinical services in a multidisciplinary institutional environment. Three research institutions involved are: University at Buffalo-State University of New York, Roswell Park Cancer Institute and Hauptman-Woodward Medical Research Institute. Buffalo,